others, however, it had been of use. It improved the appetite often when the mental symptoms were not much ameliorated. Massage, like hypnotism, had suffered from quacks, and if care was not taken it would get into bad odour, and whatever use there was to be obtained from it would be lost sight of.

A Contribution to the Etiology of Idiocy.—Dr. G. E. SHUTTLEWORTH, Medical Superintendent, Royal Albert Asylum, Lancaster, briefly referred to the various etiological systems adopted by Séguin, Sengelmann, Langdon Down, Ireland, Kerlin, and others; and commented unfavourably upon certain oft-quoted American statements as to the causes of idiocy. He then brought forward his own statistics with regard to the causes of mental defect in the 1,300 cases received into the Royal Albert Asylum, ranging the causes under three heads:—(1) Those acting before birth; (2) those acting at birth; and (3) those acting subsequently to birth. He showed that in the vast majority of cases two or more factors contributed to the etiology. In his experience, the most common factors in the first group were—(a) a tubercular or scrofulous family history; (b) an insane or neurotic heredity; (c) maternal ill-health during pregnancy, accident, or shock (the mother's account of the last to be received with caution); (d) intemperance of one or both parents. Parental consanguinity and inherited syphilis were, no doubt, often causes, yet not so frequently as had been supposed. Under the second head, the influence of primogeniture was discussed, as also that of instrumental delivery as compared with unassisted protracted parturition. In the third class the most frequently assigned cause was eclampsia (infantile convulsions); but oftentimes this might be the effect, and not the cause, of nervous instability. The febrile disorders of childhood, and their sequelæ, figured as causes in some 10 per cent. of the author's cases; and cases attributed to injury were almost as numerous. But parents' statements with regard to these matters needed to be taken *cum grano*, as they were naturally disinclined to recognise or acknowledge congenital and ancestral defects. The author's experience, indeed, led him to deprecate the too hasty acceptance and publication of assigned causes, which had little scientific value till sifted, a process only possible as time brought to light the facts of family history.

Some Further Facts respecting the Causation of Idiocy and Imbecility.—Dr. FLETCHER BEACH, Medical Superintendent, Darenth Asylum, referred first to scattered papers of his dealing with some of the causes of idiocy and imbecility. In the present paper he proposed to touch upon all the known causes and give his experience, which might perhaps differ slightly from that of others whose patients were drawn from a higher class of society. In considering the subject, some causes would be found to exert their influence chiefly before birth, others at birth, and still others at some time—it might be years—after birth. Of all the causes, hereditary predisposition played such an important part that Moreau, of Tours, found it present in nine-tenths, and the author in 76 per cent., of his cases. Next in order the author would place intemperance, combined with other causes (rarely was imbecility due to one cause), on account of the parents of his patients not at present considering drunkenness a disgrace. A history of phthisis would take the third place, and maternal impressions the fourth. He was of opinion that, owing to the important part taken by hereditary predisposition in the production of the idiocy and imbecility of the patients under his care, convulsions in infancy, epilepsy, fevers, and injuries should take a more prominent position as causes than was accorded them by some, whose experience led them to express a different opinion. Tedious labour, consanguinity of parents, and congenital syphilis—especially the latter two—were not such common causes as many supposed. The histories of the cases were obtained from the parents, and corrected by knowledge received from relations and parish officials.—Dr. LANGDON DOWN felt gratified at the confirmation of his own published observations by the valuable papers to which they had listened. Dr. Langdon Down desired to call attention to the developmental class of idiots to which he had previously adverted. Emotional disturbance of the mother during gestation was, in his opinion, a most important factor, and the kind of idiocy which resulted was depending on the period of gestation at which the disturbance took place.

Idiot Brains.—Dr. SHUTTLEWORTH exhibited a series of idiot brains.

Sections of the Brain of the Marmoset stained by Weigert's and Pal's Methods.—Dr. BREVOR showed sections of the brains of marmoset and monkey stained by Weigert's and by Pal's hæmatoxylin methods. The whole brain was hardened by bichromate of potash

(3 per cent.) for six months, and, after embedding in celloidin, sections were cut; and, after being stained by hæmatoxylin (gr. iv to 3ss alcohol absolute, and 3j of water) for twenty-four hours, the sections were washed in water, and then, in the case of Weigert's method, transferred to a solution of ferricyanide of potash and borax (gr. vj of each to 3j of water); and, after complete differentiation, the sections were washed in water, dehydrated, and mounted in Canada balsam. With Pal's method, the sections, after staining by hæmatoxylin, and washing in water, were treated by a solution of permanganate of potash (one-quarter per cent. in water), until a distinct differentiation was observed between the white and the grey matter; after this the sections were bleached in Pal's solution (pot. sulphite and oxalic acid, gr. iij of each to 3j of water), until the grey matter was bleached white; probably this effect would not be produced the first time, and the section must be washed in water and passed again through the solution of permanganate of potash, followed by that of sulphite of potash, and then by water; this process must be repeated until the grey matter became quite white. The white fibres should be stained dark blue or black. The hæmatoxylin solution should be made fresh, and its power of staining was increased by adding a very minute quantity (1 per cent. of saturated water solution of lithia carbonate) just before using. Serial sections of the marmoset's brain in different directions were shown, and also some sections of the monkey's brain. After Pal's method the section could be stained by carmine.

A REVIEW OF METHODS FOR THE EXACT REGISTRATION OF SOME COARSE CHANGES IN THE BRAINS OF THE INSANE.

Read in the Section of Psychology at the Annual Meeting of the British Medical Association held in Leeds, August, 1889.

By F. ST. JOHN BULLEN, M.R.C.S.,

Pathologist to the Wakefield Asylum.

HOWEVER fluent and happy may be the language in which the written descriptions of morbid appearances are made, it must be obvious that, unless the terms of expression in which they are couched be those of an undeniably exact and indisputable kind—so far as is possible, at least—and capable of representing accurately to the reader those states observed by the writer, errors without number can arise. With the most conscientious bias may step in, and the more enthusiastic the inquirer the more danger there is, perhaps, of the same assuming faulty proportions, and thus, from this latitude of expression, all terms of description possessing extensibility are dangerous. Therefore our attention should be ever directed towards the devising of means by which the personal element in recording may be negatived, and unequivocal statements replace those accounts which, however carefully and veritably essayed, have their vividness and exactness to a great extent alone in the mind of him describing, and must fail in the transmission of such recall of conditions to others. Unfortunately, it goes without saying, these much-to-be-desired methods are neither easily devised nor when devised applied in many cases; but some approach to greater accuracy (by the persistent use of methods already of acknowledged service) than has hitherto been attained is certainly prospective as regards many features of which we need note. And, moreover, even if means suggested and employed are at first crude and unsatisfactory, it is to be hoped and endeavoured that other modes more perfect may improve or supplant. Even now, if we reckon up the methods of investigation at present open to us in dealing with the brain, we find in any single organ ample labour for several workers, so great in number and importance are the varied features demanding prolonged and assiduous inspection and so delicate the manipulations often required. If we include microscopic examination in our research, the task is almost illimitable, and the latter's importance is indeed great out of all comparison with the coarse methods. Yet these latter may yield facts of much import and special value, thus all means adapted to their careful study must prove worthy of consideration. It may

be, hence, admissible to take a cursory view of such means as are at present to our knowledge serviceable and in actual use with us. Taking in hand first the varying conditions of skull-structure and conformation, we see that in this department alone very considerable labour may be expended. It is customary in the West Riding Asylum to preserve in every instance a ring of the skull, which is taken through the occipital protuberance behind and through the frontal bone at about an inch above the root of the nose. This ring is useful apart from furnishing certain measurements, in being a chronicle of the thickness and density of the osseous structures. Its depth is about 0.75 cubic centimètres only, so that bundles of the segments can be (separately labelled) stowed away in small space for convenient inspection. Further, an accurate modelling of the skull-cavity by means of paraffin wax is obtained. The uses of this have been previously summarised by Dr. Bevan Lewis; briefly recapitulated, they are: the procuring of a perfect mould of the cranial cavity, from which can be ascertained its volume, and which serves for subsequent comparison with that of the brain and estimation of the amount of wasting suffered by the latter, and as a means by which all requirements for craniometrical observations are furnished. It is easy, again, to obtain a faithful representation of the cranial interior from this model by the use of plaster-of-paris. If the method adopted by Dr. Tuke for estimating the capacity of the cranial cavity be preferred for any reason, we have found it convenient, after plugging the foramen magnum with a tightly-fitting cork, to brush the remaining orifices over with just liquid paraffin wax, which almost immediately sets, and forms a thin yet resistant film, quite occluding. The amount used is most inconsiderable, but can be approximately estimated by simply melting a known weight of the wax. No escape whatever is traceable after this process has been applied. Valuable records are also obtained by taking paraffin-wax moulds of the brain hemispheres, and casting plaster models from them. The mode of application will need to be varied according as to whether a cast of the entire organ is desired, with a view of showing its characters as a whole, in regard to peculiarities of contour due to atrophic changes, internal softenings, etc., or to obtain, more especially, representations of the convoluted arrangement for study. In the latter case the hemispheres are best separated and laid on the mesial surface, some small block being placed beneath, that the convexity of the exposed aspect being further increased, the wax may better penetrate into the opened fissures. Whatever result be aimed at, the method used is simply that of pouring wax sufficiently liquefied from a spouted vessel over the brain surface until a thick enough coating is secured. When fairly set, which is speedily accomplished, an immersion in cold water completely consolidates it and renders it fit for removal. Very perfect plaster casts can be procured from these, and, indeed, are of superior use for some purposes to photographs or to methods of preserving the brain, inasmuch as the latter often cause shrinking and distortion of the original shape of the organ, whilst the prescribed mode is effectual in securing an exact counterpart. More particularly useful will this process be found when it appears needful to examine the interior of the brain at the same time that the external features necessitate being made permanent. We have not found the pursuance of this procedure to act unfavourably on the brain cortex as regards subsequent microscopic investigation; of two portions taken from the same organ and respectively subjected and non-subjected to the action of the wax, no obvious difference was found. The lowest temperature at which complete fluidity is obtained is, of course, used, whilst if special sites of the cortex are previously decided upon for examination, the membranes can, as indeed they always should be for the latter purpose, be left unremoved, which still further diminishes the chances of penetration. The most satisfactory method of preserving the brain itself is that of Giacomini's, described in the July number of the *Journal of the Neurological Society* for 1880. The process, as there given, has been considerably modified in its performance at the Wakefield Asylum, and the preparations now obtained, as compared with those made on the original formula, are sufficiently superior to justify the description of the procedure at present adopted. The brain is first immersed in a saturated solution of zinc chloride. The exact proportion in which the salt exists to the water I am unable to give, but usually about six pounds is added to ten litres of fluid. The commercial chloride of zinc generally contains some white powder, which is precipitated when the former dissolves, and may be mistaken for the first indication

of a fully saturated solution. After the brain has been three days in the preceding, the membranes are stripped, either whilst it is in the chloride liquor, or else when it has been transferred to water for this purpose. It is then replaced in the solution, and allowed to remain in such for about a month, until which time, if the concentration be proper, free permeation of the brain will not have taken place, and consequently the latter not have sunk. If a weaker solution be used, the brain will subside more speedily, and will prove eventually that it has not obtained a fit consistence. When the period for chloride-immersion has expired, removal to spirit is accomplished, and the organ allowed to soak for about fourteen days; the bottom of the jar in which it is contained being well covered by wool to protect the brain from pressure. At the end of this time the organ is transferred to glycerine, and is passed through three strengths of the latter. This procedure is both economical and effectual. The fresh glycerine, forming No. 3 of one performance of the process, becomes No. 2 on the second, and No. 1 (or the weakest) on the third. In this last, the brain is first deposited, and remains for some seven to ten days, is then placed in the glycerine of medium strength for about fourteen days, and in the third or strongest quality for a time varying from one to six months, the sinking indicative of complete absorption occasionally not taking place before this latter period. Wrapping in clean soft rags until all draining has ceased then follows, and finally some three coats of varnish are applied (what is called "paper-hangers" being by far the best). The more perfect is the result the less hurried are any of the stages, and, plenty of time being given, the contour and consistence are most excellently preserved. The latter, indeed, becomes increased to almost wooden hardness, and the organ may be handled to any extent without fear. The difference in the results between the process as originally and as now performed is indicated in one way by the brain weights before and after the treatment. As examples: Brain prepared in 1886—before, 1,740; after, 820. Brain prepared in 1888—before, 1,655; after, 1,145; or, the membranes being stripped, as 1550 and 1475 respectively. The apparatus which has been hitherto used for obtaining the specific gravity of the whole brain has nothing to distinguish it from Stevenson's except some difference in the size and inclination of the mouthpiece. After a considerable number of trials with this apparatus (nearly 150), I am sufficiently dissatisfied with the results to suppress them. The objections appearing more weighty are these: in an ordinary bell jar of circular shape, the diameter which is ample for the long axis of the brain is much over-sufficient for the transverse; thus a larger superficies than needful exists, and so the vertical displacement is minimised. Hence a considerable quantity of fluid can be added without producing any appreciable rise of level. This, unless it can be made certain that the extreme limit, short of overflow, has been reached is a serious fallacy, and I have found, in the case of the before-mentioned jar, when this point has seemingly been gained, that fluid may still at times be added, owing to the uncertain amount of accumulation around the escape orifice as a result of cohesion. If the bulk of the fluid, indeed, be very carefully augmented, the level will be raised to a point much above that at which it will stand after the overflow has taken place, inasmuch as the cohesion of the liquid to the lip of the mouth being overcome, the influence of molecular attraction acting from the sloping gutter of the jar is sufficient to accomplish this. Another undesirable feature is the delay ensuing on the overflow through a limited aperture, which it is not of service to make free in a vertical direction, since the rise of fluid is not much. Again, owing to the escape of fluid being in one direction only, a current thither is established which has sufficient force to materially aid the aforesaid influence of molecular attraction. This form of apparatus I take, then, not to fulfil certain conditions implied, if accuracy is sought after, such being rapidity, in order to prevent the ready imbibition by the brain of the fluid, as far as possible; easy overflow, by means which should not involve any resistance to free and ready escape on the one hand nor inducement to accumulation on the other; efficient collection and graduation of the displaced fluid, the method of estimation being sufficiently precise to afford measurements in 1 cubic centimètre; an accurate mode of ascertaining the highest level which can be reached short of an overflow; and a jar for immersion, more adapted to the shape of the brain, in order that, the plane superficies being diminished as far as possible, the displacement of fluid may be increased in proportion vertically. A fluid of higher specific gravity than water should be used in order

to diminish the exchange between the brain and such medium, which is prejudicial to the accuracy of the results. I have just had completed a rough model of an apparatus which I think will embrace fairly accurately the foregoing requirements. Its characters are these: Around the upper part of a glass bell-jar runs a gutter-like trough, the floor of which has a sharp downward inclination to the spout through which the trough empties itself. Over the jar is suspended a small magnet, which is capable of being adjusted by a fine screw to a required level, and in completion of this part of the apparatus, a needle fixed in the centre of a cork-dial (to float on the surface of the fluid held in the jar). A tube opening into the floor of the jar curves from it outwards and upwards, and then ascends vertically. It is graduated in cubic centimètres, and the communication between it and the jar is controlled by a stop-cock. The mode of working is as follows: The highest level to which the fluid in the jar can be brought without overflow is found after a few trials, and the magnet is so adjusted that at this point the needle of the cork-float touches the metal. I may here say that I have found, after several experiments with a jar of large superficies, that a couple of cubic centimètres added is sufficient to diminish an almost inappreciable distance, and cause the needle point to adhere to the magnet. The graduated vertical tube is then filled and the level of fluid carefully noted (the connection with the bell-jar being shut off). The latter is now filled to its extreme capacity, and the body whose specific gravity is to be taken lowered carefully in. When no

more fluid runs over the edge of the jar and the oscillation of its contents has ceased, the stop-cock commanding the communication between the jar and vertical graduated tube is opened and the fluid held in the same allowed to flow in gently until the cork-float once again touches the magnet. The difference between the level of fluid in the tube before and after this shows by graduation in cubic centimètres the amount displaced from the jar, which for corroboration may be compared with the overflow collected from the gutter-like trough surrounding the jar

This process, once performed for ascertaining the weight displacement, is repeated to obtain the volume. Such experiments as have at present been made by me with this apparatus show considerable accuracy, which promises to be made quite complete when a perfect model has been constructed. With regard to taking the specific gravity of small portions of the cortical and medullary substance, the method still used at the Wakefield Asylum, and, as far as I know, not replaced by any other one elsewhere, is that of Dr. Sankey, as originally described. There is one morbid change which it is highly important to measure the extent of correctly—namely, atrophic thinning of the grey cortex. It has been noted in a considerable proportion of the synopsis cases, but merely in the form of arbitrary statements, so far as I am aware, and without accurate measurement. This latter it is less easy or more unsatisfactory to make than would seem probable. The variations in depth are, expectedly, very delicate, and the definition of the lower layers of grey matter indifferently apparent, especially under conditions of pronounced anæmia or degeneration being badly demarcated from the white substance. In fact a line of separation is—indeed, naturally so—only clear under favourable circumstances when viewed by the naked eye, and magnifying rather hinders than helps. With regard to such modes of measurement as are feasible, it appears to me that as, from the preceding, these naked-eye markings must be somewhat coarse, the simpler the means used the better. Through the kindness of Dr. H. Major I was furnished with specimens of his tephryliometer, but, after frequent and careful trials, I am compelled to confess that the objections mentioned in the *Psychological Medicine* of Drs. Bucknill and Tuke have weight. The column of brain undoubtedly undergoes elongation, whilst it is also difficult to secure horizontalism of the grey matter in the tube. Blood-stained fluid, too, is often superimposed and obscures the demarcation. Traction on the brain column may be avoided to some extent by either section with a scalpel made across the imbedded end of the tube prior to withdrawal, or by separating a portion of the convolution whose depth of grey cortex is to be estimated before plunging the instrument in. The hair-divider compass used by Dr. Tuke I have not tried; it is doubtless capable of registering very delicate variations. The simple method employed by myself consists of a glass slip 3 inches by 1, made by Zeiss, on which 50 millimètres divided into 0.5 millimètre are inscribed. It requires no more precaution in using than the avoidance of a film of moisture between it and the cortex, which both obscures and magnifies, and the maintenance of both head and hand in absolute steadiness during application. I have no reason to be dissatisfied with this more primitive form of instrument, though its finest divisions are the half millimètre. In making any series of measurements it is, of course, necessary to fix upon certain definite sites of the cortex, and none, I think, can be better chosen for ordinary purposes than those included in Pitro's series of sections. It is advantageous, in estimating the depths in these different regions, to have the outlines of the sections cut on a slate slab, and to mark them down with chalk as they are measured. Few parts of the brain-exploration appear to me to deserve more attentive investigation than does the arterial system, and, from systematised measurements of the vessels, I should incline to hope for results full of value. There are some remarks made by Dr. Lowenfeld, in his recent work on *Cerebral Hemorrhage*, relative to the connection of certain vascular conditions with heredity, so pregnant of suggestion, that it may be pardonable in the consideration of this portion of the subject to recall them briefly. His statements embrace the following: "That the development of the brain does not run parallel with that of the body, so development of the cerebral vascular apparatus cannot go in entire proportion under normal circumstances; and as the relation in size of the brain to the body varies, so that between the cerebral vascular system and brain, and not the general arterial apparatus, is the standard to be regarded. Varying relations between the brain and its vessel-system may exist through a superaverage development of the former with one of the latter, in proportion to that of the general arterial system, or with a formation of the brain-vessel apparatus on the scale of lowest limits of physiological development; or, lastly, by this being in excess in proportion to a medium or underaverage brain. These preceding dicta are arrived at in the following way: Examination of the width of the cerebral vessels in relation to the weight of the brain, and to the width of the aorta (as presenting the expression of the entire remaining arterial system), and also as to absolute dimensions (made in healthy

brains with healthy vessels). Thus, taking the united breadth of both carotids and vertebrals as representing the collective value of the brain-vascular system, the quota of such falling to each 100 grammes weight of cerebrum varies between 0.175 and 0.315 centimètres, or, with a fixed weight of brain, the vessel-breadth (taking 1 as the minimum of the arterial area) lies between 1 and 1.8. The circumference of the aorta increases to the end of life; that after the age of 50 being, however, merely a dilatation from lessened elasticity. The relative cerebral vascular breadth also increases up to the age of 50, and is partially, but not altogether, an appearance of age, therefore. That this last is minor in influence compared to other causes of variation is shown by the average relative breadth of the brain vessels varying between the ages of 20 and 50 from 23 to 25 only, or, in other terms, as 8.6 only, the minimal value. This is the difference occasioned by age. But between the age of 20 and 30, and 30 and 40, the relative breadth fluctuates to the extent of 50 per cent. of the minimum, and from the age of 40 to 50 to 41 per cent. Further, neither absolute nor relative measurements run entirely parallel with those of aorta. Hence the ensuing conclusions are arrived at: That the relation of the arterial system of the brain to the weight of the latter is subject, even under normal conditions, to considerable variations; that deficient development of the former (as indicated by minimal value of relative breadth) can certainly coincide with a corresponding condition of the entire arterial system, but that this is in nowise always the case; and that defective condition of brain vessels may exist with an otherwise well-developed vascular system." I have given the preceding (as concisely as possible) because it seems to me to well indicate the direction in which investigation deserves pushing, and also furnishes the scheme for such. The measurements were made with a delicate compass (hair-divider?), and the distance between the points marked off on a micrometer glass slip. They were not taken on the day of section, but from twenty-four to thirty-six hours after death, to avoid the very important influence of death rigor. The same portions of the same vessels were always chosen; the carotid just below the bifurcation, the basilar directly above the union of the vertebrals, and the latter immediately below this point.

Dr. BEEVOR had used Giacomini's method of preserving brains, and had not found the method of much use for coarse sections of the brain, as the differentiation of the colour between the white and grey matter was not well preserved; but, for showing the convolutions of the brain, it was very well suited. Mr. Bullen had improved the methods so that there was less shrinkage than formerly, and he was to be congratulated on his paper, which was an indication of the exceedingly valuable pathological work which was being done at the West Riding Asylum.—Dr. WILBERFORCE SMITH made some observations on the value and results of a routine habit of examining the carotid pulse in the neck.—The PRESIDENT had been successful in employing the glycerine and chloride of zinc method in preserving the brain.

DRAFT REPORT OF THE COMMITTEE APPOINTED TO INVESTIGATE THE AVERAGE DEVELOPMENT AND CONDITION OF BRAIN FUNCTION AMONG CHILDREN IN PRIMARY SCHOOLS.

IN some introductory remarks the PRESIDENT reminded the Section of the action taken last year in appointing a committee to investigate the average development and condition of brain function among the children in primary schools. That Committee had prepared a report of the work done by certain members of it, and several separate reports of other members would be presented for adoption. It must be clearly understood, however, that in adopting the general report drawn up by Dr. Warner, or the separate ones, they did not in the slightest degree commit the Psychology Section to the correctness of the details contained in them. To Dr. Warner they were all greatly indebted for the labour and time he had expended on the preparation of the tables accompanying this report, but he did not ask them to acquiesce in the tests and opinions he had adopted in testing mental defects by external physical signs. Dr. Tuke then called on Dr. Warner to present the draft report of the Committee.

Dr. WARNER, in moving the adoption of the report, said a large part of this report was published in the JOURNAL of July 27th. A list of 41 cases was given of the pupils, among the

5,000 pupils seen, who appeared, for various reasons stated, to be "exceptional children" from the educational point of view. It was pointed out that, while conditions of over nerve mobility were most common among girls, this sex presented the smallest proportion of dull children; on the other hand, boys presented the highest number of cases of defects in development and mental dullness. It was distinctly stated that the number of cases presenting "some nerve signs" was not to be taken as representing the proportion of children unfit for ordinary education. The frequent alliance between conditions of defect in development of visible parts of the body and mental dullness as reported by the teachers, low nutrition, and nerve defects, was pointed out in the statistics presented. Defective form of palate appeared more frequently to coincide with brain defects than did the epicanthic fold of deformed ears. A list of various defects found was given, and it was pointed out that *petit mal* was to be found among school children.

Dr. SHUTTLEWORTH, in seconding the adoption of the report, urged that the draft report on London schools, as printed, should be accepted by the Section as a portion of the general report on the subject of the physical development and brain state of school children. He mentioned that he had himself made an independent examination of some primary schools at Lancaster, but he did not propose to bring forward these statistics now, but was content, on the present occasion, to be a junior partner in the report so ably drawn up by Dr. Warner. He had had the privilege of accompanying Dr. Warner in the examination of a large national school in London, and he was bound to say that, starting with some prejudices against that gentleman's methods, he was much gratified with the fairness of the examination of the pupils and the subordination of the preconceived bias to the observation of actual facts. If the importance of this inquiry needed emphasising such emphasis was given by the report of the Royal Commission on Blind, Deaf-mutes, and Exceptional Children, who referred to the inquiries of Dr. Warner's Committee with interest, and quoted some of the figures. General Moberly, who appeared before the Commission as representing the London School Board, stated that there were 20 idiots attending school and 435 not attending. Under the head of those under 13 and permanently disabled there were a little under 3,000, 596 attending, 2,358 not attending. Surely this was an argument for opening the schools under the Board to such an inquiry as this Committee was carrying on.

Dr. FLETCHER BEACH supported the adoption of the report, and he did so specially because he had been associated with Dr. Warner in the examination of four or five schools. At the outset Dr. Beach was anxious that not too much prominence should be given to the association of nerve symptoms with mental defect or exceptional children; but he was bound to confess that Dr. Warner was specially careful that his ideas should not be unduly pressed. In two schools the visit was made soon after the examination of the Government inspector, and then the proportion was 1 in 7½. This was thought to be too great, and on a subsequent visit the proportion was 1 in 10. Dr. Moberly, Chairman of the Subcommittee of the Deaf and Dumb and Blind of the School Board of London, told Dr. Beach that he had recently tried to have special classes appointed by the School Board for the education of exceptional children, but without avail; it was to be hoped that the reports now presented might have an influence for good. Dr. Beach wished that the schedules and paper of suggestions drawn up might be approved by the Section.

Dr. IRELAND said that he had made a report about the Board School of Prestonpans. In this parish there were 2,265 inhabitants, and 502 children on the school roll. There was only one school, where all the children were compelled to go. He found in this school five decidedly imbecile children, fifteen dull of hearing, and twelve shortsighted. He did not think that to establish special schools for very dull children would be popular in Great Britain. There were such special schools in Germany and Norway, which were conducted through special methods, but he thought that in this country the difficulty would be met by having special arrangements for backward children in separate rooms of the large board schools. He read portions of a report from Jakob Sæthie concerning the success of the school for backward children under his charge at Bergen.

The following report, presented to the Committee by Dr. Savage, was then read:—

I have had no time to undertake personal investigation of the schools, but in consulting practice I have many opportunities of seeing and examining such children, and I am convinced that though the percentage is small, the total is yet considerable, and

that there is a large number of all classes of children unfit for the general education given in board and public schools. I believe that a teacher of some years' experience readily detects such children, but hitherto no fixed points have been discovered, from which it may at once be decided that such and such a child is unfit for general education. In my experience there are the two great distinctions, first, those children who from moral rather than intellectual defects are unfit for general training; and secondly, those who are intellectually defective. I find in the first class children who are dull, often solitary and unsocial. With these peculiarities the head shape has, in my experience, but little to teach us, the expression of face is often a great aid; in these children there may be apparent attention and application but with little gain; they appear to be left out of all friendship by the rest of the normal children. A much more serious group of children unfitted for general education is that in which there is distinct loss of moral power; these children are social and not solitary, they are often bright and restless. I do not know of any special signs either physical or from expression which will lead one to detect such children. As to the intellectually defective, I find there is a large group in which the children are defective in power of application: they understand a thing, but at once pass on to the next, without allowing time for the fixing of mental impressions. Some of these children pass for great students, but their reading leaves very little behind. In some of these there is marked restlessness, and this is well recorded in some of Dr. Warner's observations. Defect of power of attention with or without restlessness is common, and in some of these children, though musical and similar sensory impressions may be received, retained, and reproduced, yet the children are unable to comprehend the simplest numerical relations. There may be distinct defect in the general recording process, so that the memory appears to be absent, and these children are readily pointed out by the teachers, though they have little or no physical expression of the defect, or they may be even harder to detect and classify, for they may have special aptitudes with correlated defects, the born musician may be incapable of mathematical or general training. In my experience these highly specialised children are very few in any class, and are almost unknown in such schools as those of King Edward at Witley and London. The restlessness and want of power of attention strike me as the most readily recognisable symptoms of many forms of intellectual defect hindering general education. As to sensory defects, these have been so carefully studied, in part at least, by the Commission on the Blind, etc.,¹ that I need only say that the neglected deaf readily pass into a state of weakness of mind and their defect necessitates special means of training, and the more full this is, and the sooner, as far as the age of patient is concerned, it is begun, the better for the public and the children. I have it on the authority of a former teacher of the deaf and dumb of a great city, that by the time the children were sent to their schools they were generally partially weak-minded as well, and so it was hard to get any good results from such material. The head size and shape have, in some cases, great value, but it will not do to select only those with defective heads for special training. I believe a misshapen head is more often associated with intellectual and moral defects than one only below the normal size. I invariably examine the height and width of the palate, and I am convinced that in many cases it confirms the diagnosis of congenital defect if the palate be high and narrow. It is difficult to know how best to classify speech defects which may interfere with ordinary teaching, and which may yet, by special training, be relieved or cured. Some writers on idiocy make the power of speech the keystone of their system of classification, and I consider that very much is to be learnt from it. Stuttering and stammering may be quite independent of other defects, but in many cases the children thus affected come of nervous stock, and some, at least, have other defects correlated to it. In many cases there are to be recognised other sense defects allied to stammering, and these uncertain and spasmodic performances of function; these conditions which I always look upon as allied to the feeling of doubt greatly affect the power of acquiring knowledge. This field of observation needs investigation. To this discursive introduction I add the result of the experience of the two head teachers at King Edward's Schools, where there were on December 31st, 1888, 239 boys and 240 girls, 183 having been admitted during the year. The children have lost their fathers, belong to the lower classes, and are trained for domestic service and as artisans, or for the army, etc. They are admitted after

passing a medical examination at the age of about 11, and are, therefore, to a certain extent, a specially selected class, free at least from gross bodily or sensory defect.

Report of Mr. Smith, King Edward's Schools, Witley, schoolmaster.—Moral defects in boys may depend (a) on congenital defect, (b) on bad surroundings. In such boys there is often intellectual activity. The degrees of defect are: 1, Wanton mischief; 2, lying and cheating; 3, thieving; loss of conscious responsibility. Such defects not to be detected at once. In such, association under careful supervision is better than isolation. Dull boys often are the more moral. Intellectual defects are less common than moral ones. Of 240 boys, 12 would be markedly deficient, but only 6 need special arrangements for education. Such defects are easily detected by experienced teachers, but no rule can be given to guide the judgment. Such boys always assume knowledge, as if to throw the teacher off the scent, but when detected as deficient they are depressed. There is generally a want of facial expression in these boys; they are often violent and passionate without cause. I have studied head shapes, and find no certain aid to be obtained from this. I believe one may learn more in five minutes' conversation with a boy than from any amount of speculative examination of head and body.

Report of Miss Wilson, King Edward's Schools for Girls, London, schoolmistress.—Only 1 in 200 unfit for general class education. These have heavy aspect and are often restless. This dullness often joined with cunning. Easily moved to tears. Single teaching often advances these children fairly well.

Dr. YELLOWEES paid a high tribute to the wonderful enthusiasm of Dr. Warner, and he hoped he would not be misunderstood when he said that enthusiasts were in danger of becoming extremists. Referring to the printed report of investigations on the London schools, he said the reporters seemed to him to have done their work too well, and with a minuteness of detail which, if applied even to the sacred ranks of the British Medical Association, would assuredly result in the tabulation of many members. He thought such conditions as "nervousness" and "mental dullness" far too vague, and often perfectly consistent with average mental health and with ordinary school education. The statement of the teacher and a conversation with the pupil he deemed far more important than such physical signs as the mode of projecting the hand, which was variable and uncertain. The observations in the reports overlooked the moral obliquities of childhood which, as referred to by Dr. Savage, were so very important. That really feeble-minded children required a special and modified education all agreed; and this should be in a separate class, not in a separate school. But, when they tabulated so large a proportion of children as in these tables, the public were apt to laugh at them as mere faddists, imagining that they wished separate instruction for all. No one had any such idea, and it would be a serious injury to the merely nervous children to be associated only with the feeble-minded. The question had a public and social aspect as well as a scientific and medical one. In the latter let them be as minute in their observations as they pleased, but in the public aspect of it a practicable and reasonable line must be drawn.

Mr. WILKINSON, Chairman of the Leeds School Board, said that he was present to show that those who were engaged in the practical working of elementary education were ready to welcome and assist in any effort to improve the present system of education. It was a most difficult and complex problem, and if all who were interested in it were to approach it with mutual confidence, the result would be sure to be beneficial. That the dull children were a drag upon the whole school was self-evident, but what to do with them was not so easy. A separate school for them would be an injustice to them, as it would stamp them for all life; but it might be possible and advantageous to put them into separate classes with special teachers.

Professor SMITHELL, Professor of Chemistry, Leeds College, expressed the opinion that the subject was one that should be considered both by teachers and medical men, in order to obtain if possible the body of evidence necessary to interest and convince the public. He considered it would be extremely difficult to constitute a class of "dullards" on a medical diagnosis only, and that the isolation of such a class would be resented both by the pupils and their parents. He thought also that a large portion of the dull children who acted as a drag on the education of others were dull not entirely by innate dullness, but largely because of the want of educational methods attractive and stimulating enough to develop their dormant intelligence. He thought that the inquiry would be more instructive, say, ten years hence, when it

¹ *Times*, July 25th and 27th.

was to be hoped our methods of education would be vastly improved.

Dr. LANGDON DOWN was glad to find, in the report of Dr. Warner, and in that of Dr. Savage, a recognition of what he had long taught of the correlation of cranial forms with mental defect. He felt, while much might be done by a study of cranial defects, there was a danger that the ratepayer might be alarmed by the cost of special schools. Dr. Langdon Down thought that a large number of children of a backward character might be advantageously trained in separate class rooms. While agreeing with Dr. Yellowlees that there was a tendency to too great refinement in the report, he also thought that great praise was due to Dr. Warner for the time and trouble he had given to the subject. He was most anxious for an extension of educational training for the really feeble-minded of the poorer classes in various counties such as was now existing in the metropolis.

Dr. BOWERS desired to emphasise the remarks of a previous speaker, and to express his opinion that dull children were manufactured by the cast-iron requirements of modern education codes, and that it would be possible to carry on their education in general classes much more advantageously than in special classes, far less in separate schools, where the teachers' work was judged by the general state of the classes, instead of, as at present, by the passes of each individual child.

Dr. WILBERFORCE said that medical observation could be reduced to numbers in a degree much greater than had hitherto been effected. This was true in regard to ordinary medical work, and must especially apply to extensive observation in schools. Mr. Galton's precise methods were only an indication of much more that could be done in the same direction. Dr. Warner's interesting methods of investigation had been truly described as possessing too much refinement for extensive employment.

Dr. FLETCHER BEACH moved that these reports be adopted, the Committee dissolved, and that a residual Committee, consisting of Drs. Hack Tuke, Shuttleworth, Ireland, Yellowlees, Fletcher Beach, and Warner, should have power to publish them, and use the funds granted by the British Medical Association for that purpose.

Dr. SHUTTLEWORTH, in seconding the resolution, took the opportunity of mentioning, in connection with the remarks of Dr. Ireland, that in Norway the great merit of separate classes for feeble-minded children was the provision of extra teaching power for these classes. One teacher was provided for ten of the abnormal children—a very liberal allowance as compared with one to thirty, the proportion of teachers to normal children. It was manifest that three times the ordinary teaching power was calculated to make an impression.

The following resolutions were proposed by Dr. YELLOWLEES and seconded by Dr. WARNER: (1) "That a Committee be appointed to study further the conditions of development and brain-power of children, and to bring such studies under the notice of school teachers. (2) That the Committee have power to add to their number from outside the medical profession, and to communicate on this subject with various educational bodies. (3) That the Committee be authorised to apply for money grants, and to publish a report."

The resolutions were carried unanimously.

The following resolution, moved by Dr. YELLOWLEES and seconded by Mr. NORTH, was carried: "That the Section of Psychology of the British Medical Association, having conducted an investigation and considered their report as to the average development and brain-power among children seen in primary schools, is of opinion that a Scientific Committee should be appointed by the Government for the further elucidation of this question."

TYPHOID AT THE WEST END.—On September 10th, Dr. W. H. Corfield reported to the Committee of Works of the parish of St. George, Hanover Square, that he had failed to trace any connection between the recent outbreak of typhoid fever at the West End and the milk supply. As an illustration of the difficulty of such an investigation, he mentioned that one firm which had furnished some of the dealers who supplied the houses in which cases had occurred with a portion of their milk, obtained their own supply from about sixty different farms.

The sum of £3,000 has been contributed this year by the working classes to the revenue of the Wolverhampton General Hospital. This is an increase of £200 upon that of the previous year.

THERAPEUTIC MEMORANDA.

ANTIPIRYN IN RENAL DISEASE AND DIABETES.

In the summer of 1888, while acting as honorary medical officer to the Cottage Hospital, Clevedon, Somerset, the following case came under my care.

On the card over the patient's bed was written, "J. B., aged 29, Bright's disease." The matron informed me that the case was regarded as hopeless. The patient was admitted March 3rd, 1888, having been in good health till two months before. She was then seized with a diphtheritic sore throat, and soon after ordered to Clevedon for change of air. On the journey she caught cold, and dropsy quickly supervened. From the date of admission to the following June, in spite of careful nursing and medical treatment, the malady made steady progress.

I saw her for the first time on June 14th. There was then extreme general dropsy, the abdomen, face, and extremities being tensely distended with dropsical effusion, great pain in the back, especially the lumbar region; intense headache, failing vision, heart action weak and irregular, difficulty of breathing, owing probably to a pushed-up diaphragm and pleural effusion; the skin sallow, tense, and shining; urine scanty, of high specific gravity, and loaded with albumen; anæmia and general prostration. The condition of the eyes was very characteristic, the lower lids forming two distended translucent pouches; but the condition of the ocular conjunctivæ was very striking; these were, to a large extent, raised from the sclerotic in transparent bladders of effusion, producing chemosis, and seriously endangering the circulation of the cornea.

From previous slight but inconclusive observations of antipyrin in renal cases, and with a view to relieving the intense headache, I ordered three grains twice a day, with strict instructions that the action of the heart should be carefully watched. The need for this precaution was quickly demonstrated by the increased irregularity, fainting, etc.

On the third day the dose was reduced to three grains daily. From this date general amelioration of symptoms was observed, and constant steady improvement recorded. After a few days a tonic supplemented this treatment, and in the course of three weeks a great change was observable. The dropsy was much less, the intense headache relieved, the appetite improved, and the patient much brighter and more hopeful. By the beginning of August she was up and about visiting friends. All traces of dropsy had disappeared, the general health was good, and there remained only a small quantity of albumen in the urine. On August 13th she was discharged for a convalescent home.

With regard to the effect of antipyrin in diabetes, I may be allowed to cite the following case, though incomplete.

While spending some of the winter months at Arcachon, a clergyman, aged 64, consulted me. He had been in failing health for some time, and his French physician was treating him for diabetes. I found a large quantity of sugar in the urine. I again adopted the antipyrin treatment, and the same cardiac intolerance was manifested. I reduced the dose to three grains daily. At the end of three weeks his health was much improved, and the amount of sugar reduced to one-fourth. I afterwards lost sight of the case.

Nice.

M. H. FRENY, M.R.C.S., L.R.C.P.Ed., L.M.

CLINICAL MEMORANDA.

SUDDEN DEATH FROM ANKYLOSTOMIASIS.

R., a Hindu, aged about 40, arrived at a Coolie house in the country about 5 P.M. on July 6th, 1889. He came from the direction of Port of Spain, and was a vagrant. During the next day he complained of feeling ill, but his symptoms were vague, and no doctor was sent for. He died at 9 P.M.

On the information of the police, I made a *post-mortem* examination the next day. The duodenum and jejunum contained large quantities of dark, tarry blood and mucus, together with a great number of the ankylostoma duodenale. The stomach was inflamed, and contained several ounces of dirty, reddish liquid. The brain and other viscera were healthy, and the man was muscular, well developed, and not markedly anæmic.

In view of the obscurity of the history, I sent the stomach and intestine to Mr. McCarthy, Government Analyst, but he failed to